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Singapore, Korea scientists find clue to tumour suppression mechanism

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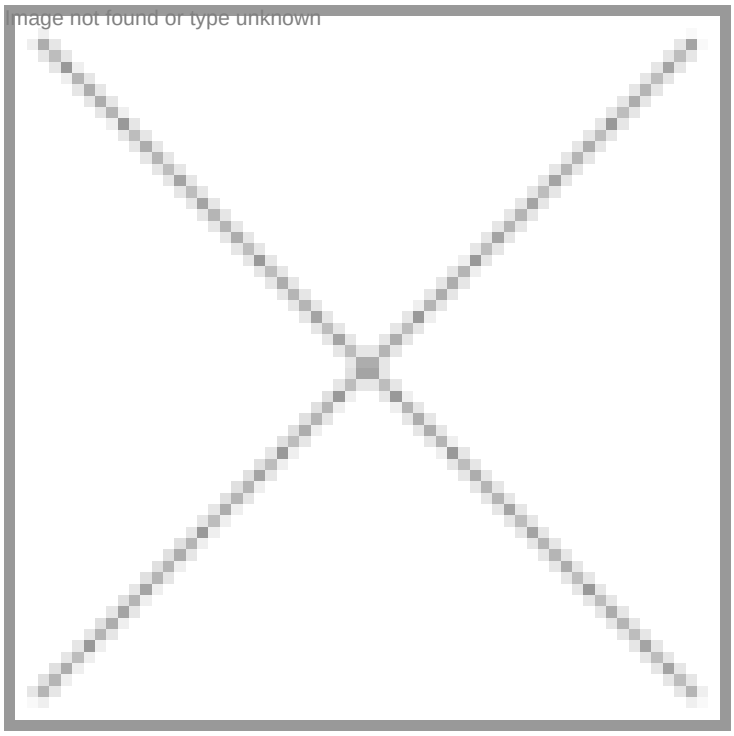

Singapore: RUNX3, a gene that is intensively studied for its function as a tumour suppressor, is likely to be a key and critical component of the body's first line of defence against lung cancer development, according to a recent study by scientists from the Cancer Science Institute of Singapore (CSI Singapore) at the National University of Singapore (NUS), together with their collaborators from Chungbuk National University in Korea.

The team, led by Professor Yoshiaki Ito of CSI Singapore, showed that RUNX3 is a major component in a well-established tumour suppression mechanism involving p53, a tumour suppressor protein that regulates cell proliferation and prevent cancer. In addition, the research team also demonstrated that RUNX3 plays a pivotal role in preventing early tumour formation.

Although the current study focused on lung cancer, the results help to explain the development of other types of human cancers. Mutations of the p53 gene occur in 50 per cent of virtually all cancer types, indicating that p53 inactivation constitutes one of the main drivers of cancer development. p53 has since been shown to exert multiple effects â€“ be it enhancing DNA repair, arresting cell proliferation or promoting cell death â€“ to inhibit cancer growth.

â€œThis study uncovered an important missing component of the tumour suppressor pathway that regulates p53 function. The identification of RUNX3 as the key component throws light on why RUNX3 gene inactivation, particularly via epigenetic mechanisms, is so prevalent in cancer,â€• explained Prof Ito. â€œFrom a clinical viewpoint, this finding has applications in early cancer detection and prevention. Cancer-specific epigenetic inactivation of RUNX3 is marked by DNA methylation, which can be readily screened for early detection or prognosis of a wide variety of cancer. It also suggests the exciting possibility that RUNX3 inactivation, if reversed by therapeutic means, may restrain cancer growth. It is therefore likely that

many new approaches of cancer treatment or prevention will be generated,â€• he added